



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,874	03/15/2004	Sylvia Monsheimer	249107US0	8347
22850	7590	10/24/2006		
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER LAMBELET, LAWRENCE EMILE				
ART UNIT		PAPER NUMBER		
1732				

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/799,874

Applicant(s)

MONSHEIMER ET AL.

Examiner

Lawrence Lambelet

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I invention, claims 1-19 and 26, in the reply filed on 8/23/2006 is acknowledged. The traversal is on the ground(s) that the examples provided by examiner in the restriction for Groups I and II, I and III, and II and III did not support distinctness; and further, that a case for burden was not made. This is not found persuasive because applicant has made no showing that an inhibitor could not be used in an alternative process for the apparatus (Groups I and II), or that selective laser sintering could not make the product (Groups I and III), or that an injection mold could not have made the product defined by few structural details (Groups II and III). Furthermore, the burden on the Office resides in the separate classifications for the inventions requiring, in this case, both separate searches and separate Art Units.

The requirement is still deemed proper and is therefore made FINAL.

Claims 20-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 1732

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 8, 10, 12-13, 17-19 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al (U.S. Patent Application Publication 2002/0145213).

Liu et al, hereafter “Liu”, discloses a process for producing a 3-D object, as recited by claim 1. Liu teaches feeding a layer of powder (pulverulent substrate) to a work surface and transferring onto it a binder (susceptor) in the pattern of an image which is melted into the powder by application of a microwave energy source. See paragraphs [0027] to [0031] and [0036]. Ability to absorb microwaves would be an inherent property of a binder thus actuated.

Liu teaches that there are repeated feeding and transferring steps (n) and that the energy application step is repeated for each layer, as required by claims 2 and 3. See paragraphs [0032] to [0033]. In the case of claim 2, $n = 1$.

Liu teaches that the powder has a particle size (median grain size) smaller than 100 μm , as required by claim 8. See paragraph [0043].

Liu teaches that the powder material can be selected from ceramics or metals, as required by claim 10. See paragraph [0044].

Liu teaches that the powder material can also be a polymer, as required by claim 12, and can specifically be polyvinyl chloride, as required by claim 13. See paragraph [0044].

Liu teaches that the powder may contain colorants (inorganic or organic pigments), as required by claim 17. See paragraph [0047].

Liu teaches that the powder may include a photo-initiator (laser-activatable additive), as required by claim 18. See paragraph [0042].

Liu teaches that the powder may include coated ceramic or metallic particles which are reacted (fused) with the binder through the application of heat, as required by claim 19. See paragraph [0045].

Liu teaches that the layers are fused or sintered, as required by claim 26. See paragraphs [0031] and [0026].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1-3, 8, 10, 12-13, 17-19 and 26 above, and further in view of Narang et al (U.S. Patent 5,980,813).

Liu teaches the process of claims 1-3, 8, 10, 12-13, 17-19 and 26, as discussed above.

Liu teaches that the radiation step is carried out in the apparatus configuration, as required by claim 5.

Liu does not teach treating with radiation as a final step after the 3-D object is delineated, as required by claim 4. Liu further does not teach that the radiation step is carried out in an apparatus other than the build apparatus, as required by claim 6, or carried out in a microwave oven, as required by claim 7.

Narang et al, hereafter "Narang", teaches that the object is removed from the build apparatus and heated in a standard processing oven or a microwave oven (food preparation equipment). See lines 50-56 in column 7.

Liu and Narang are combinable because they are concerned with a similar technical field, namely, diffuse-radiation layer manufacturing. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the method of Liu the simplified means of radiation treatment taught by Narang. The motivation would have been to avoid heavy and expensive equipment. See paragraph [0022] of Liu.

Claims 9 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1-3, 8, 10, 12-13, 17-19 and 26 above, and further in view of Knipp et al (U.S. Patent 5397225).

Liu teaches the process of claims 1-3, 8, 10, 12-13, 17-19 and 26, as discussed above.

Liu does not teach a microwave radiation frequency range of 430-6800 MHz, as required by claim 9. Liu further does not teach that the powder contains inorganic fillers, as required by claim 15, or that a specific filler is glass beads, as required by claim 16.

Knipp et al, hereafter "Knipp", teaches a microwave frequency range with a lower limit of 1000 MHz. See lines 49-55 in column 5. Knipp further teaches that a mold (3-D object) composition has inorganic fillers including glass beads. See lines 50-55 in column 3.

Liu and Knipp are combinable because they are concerned with a similar technical field, namely, curing with microwaves. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the process of Liu the inorganic fillers of Knipp, and would have been motivated to do so to reinforce structure. See line 51 in column 3 of Knipp.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1-3, 8, 10, 12-13, 17-19 and 26 above, and further in view of Sherwood (U.S. Patent Application Publication 2003/0209836).

Liu teaches the process of claims 1-3, 8, 10, 12-13, 17-19 and 26, as discussed above.

Liu does not teach a susceptor which is a specific protic liquid, as required by claim 11.

Sherwood teaches a phase change formulation including trimethylolpropane. See paragraph [0030] and Table 1.

Liu and Sherwood are combinable because they are concerned with a similar technical field, namely, solid freeform fabrication. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the process of Liu the

susceptor material of Sherwood, and would have been motivated to do so to reduce oxygen inhibition. See paragraphs [0008] and [0017].

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1-3, 8, 10, 12-13, 17-19 and 26 above, and further in view of Wills et al (U.S. Patent 6,900,254).

Liu teaches the process of claims 1-3, 8, 10, 12-13, 17-19 and 26, as discussed above.

Liu does not teach the powder containing 0.05-5% wt of a flow aid, as required by claim 14.

Wills et al, hereafter "Wills", teaches powder compositions having flow aid ingredient levels at 1.6-3.6%. See Table 2.

Liu and Wills are combinable because they are concerned with a similar technical field, namely, powder processing. One of ordinary skill in the art at the time of the invention would have found it obvious to include in the process of Liu the flow aid ingredient of Wills, and would have been motivated to do so to reduce compaction-effect and prevent clumping of fine powders. See lines 19-24 in column 20 of Wills.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with regard to rapid prototyping utilizing microwave energy:

U.S. Patent 5,340,656 to Sachs et al

U.S. Patent 6,593,008 to Schmidt

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Lambelet whose telephone number is 571-272-1713. The examiner can normally be reached on 8 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEL
10/18/2006


CHRISTINA JOHNSON
SUPERVISORY PATENT EXAMINER

10/20/06